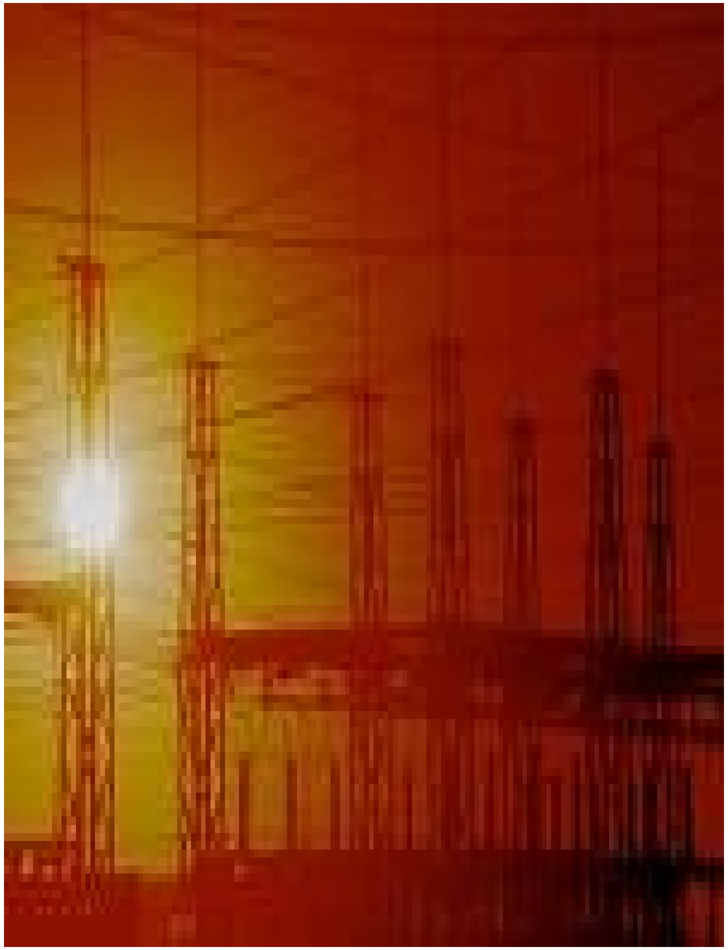
OPTIONS



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Session objectives

- Options: Meaning and type of options
- Common terminology used in options
- Factors affecting option premium
- Option pricing

Option contracts defined

- An option is a derivative security which gives the holder the right, but not the obligation, to buy or sell an underlying asset by a certain date for a certain price.

- A call option gives the holder the right to buy, while a put option gives the right to sell the underlying asset. The price designated in the contract is known as the exercise or strike price. The time to expiration is calculated based on the time from the value date to the expiration date.

- American-style options can be exercised at anytime up to expiration, while European-style options can only be exercised at expiration.

Advantages of Options

The options can be used to have the following **benefits :**

- Protect value of assets from decline in market place
- Increase income against current asset holding
- Prepare to buy an asset at a lower price
- Position an investor for a big market move even when he does not know which way the prices will move
- Benefit from a asset price rise without incurring the cost of buying the stock outright.

Option contracts defined (Cont'd)

Question:

An option gives the holder...

A. the obligation to buy the underlying asset.
B. the right to sell the underlying asset.
C. the obligation to buy or sell the underlying asset.
D. the right to buy or sell the underlying asset.

Ans : D

Option contracts defined (Cont'd)

Question:

What is the difference between an American option and a European option?

A. An American option is traded on American exchanges, while European options are traded on European exchanges.

B. An American option is written on an the assets of an American company, while a European option is written on the assets of a European company.

C. An American option can only be exercised at expiration, while a European option can be exercised at anytime up to expiration.

D. An American option can be exercised at anytime up to expiration, while a European option can be exercised only at expiration.

Ans: D

Intrinsic and time value

- The premium, or price of an option, can be divided into two components, intrinsic and time value. Intrinsic value is the payoff if the option were to be exercised immediately. Intrinsic value is always greater than or equal to zero. For example, a certain asset is trading for Rs30. The intrinsic value of a Rs 25 call is therefore Rs 5.

- Usually the price of an option in the marketplace will be greater than its intrinsic value. The difference between the market value of an option and its intrinsic value is called the time value (or extrinsic value) of an option. An option is trading at parity when the price of the option is equal to its intrinsic value (the time value is zero).

Intrinsic and time value

Question

What is the intrinsic value of a Rs.30 put if the underlying asset is trading at Rs.23?

A. zero

B. Rs.7

C. –Rs.7

D. There is not enough information to determine the intrinsic value.

Ans : B

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Option pricing

E.g. Option Premium Rs1.50

Asset price	Rs10.00
Exercise price	Rs 9.00
====================	
Intrinsic Value	Rs 1.00
Time Value	Rs 0.50
Option Premium	Rs 1.50

Time Value

- ***Longer*** the option has to run, the ***greater*** the ***time value***.
- Reflects potential ***volatility*** of share

Intrinsic Value

- Option is “***in the money***”.
- No intrinsic value - option is “***out of the money***”

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Intrinsic and time value

Question:

A certain underlying asset is trading at Rs.50. A Rs.42 call is trading in the marketplace for Rs.10. What is the time value of the option?

A. zero

B. Rs 8

C. Rs 2

D. Rs 10

Ans : C. Intrinsic Value = Rs50-42 = Rs8;

Time Value = Option Value – Intrinsic value

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Brief Recap

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What are options

- An option;
  - gives the buyer the right but not the obligation,
  - to buy (call option) OR sell (put option)
  - a specified “face” amount (face amount)
  - of an underlying asset (equity, bonds, stock index etc)
  - At a specified “strike” price
  - At a specified future date (Expiry/Delivery)

What are options (Cont’d)

- The option seller/writer must comply with option buyer’s decision to “exercise” or “abandon” the option.
- The option comes at a price (referred to as the premium). The premium is payable at time of purchase.
- Options hedges the adverse price movements while allowing you to enjoy favourable markets movements.

Options

Right (not obligation) to buy or sell security

↓

At Specified price

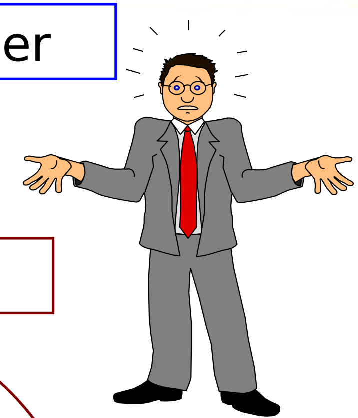
- **Within specified period** → **American Option**
- **At the end of a specified period** → **European Option**

- Call option (right to buy)
- Put option (right to sell)

Call option

Option Writer ← Option Holder

Option premium
Rs1.50 per share



Choice

Ex. option at any time
during 3 months

Lapse the option
lose Rs1.50 per option

Strike price Rs9.00

Current
share price
Rs10.00

3 months

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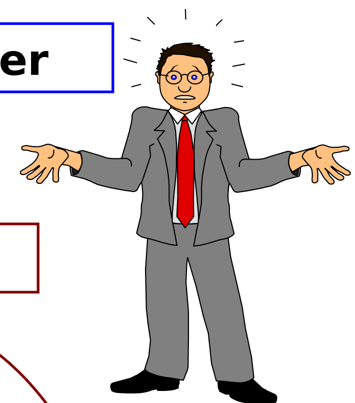
How much must share price be to make profit ?

Put option

Option Writer

Option Holder

Option premium Rs2.80 per share



Choice

Ex. option at any time during 3 months

Lapse the option lose Rs2.80 per option

Current share price Rs13.00

Strike price Rs15.00

How much must share price be to make profit?

Strike vs current price

- *"In the money"* (ITM), *"At the money"* (ATM) **and** *"Out of money" (OTM)* **options**

CALL

Type	Price	Exercise?
ITM	Strike < Current	Yes
ATM	Strike = Current	Indifferent
OTM	Strike > Current	No

PUT

Type	Price	Exercise?
ITM	Strike > Current	Yes
ATM	Strike = Current	Indifferent
OTM	Strike < Current	No

Current = Prevailing traded price

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In the money, at the money, Out of Money Options

CALL OPTION

Exercise Price = Rs.100

MARKET PRICE

Rs.80 : Out of the money option

Rs.100 : At the money option

Rs.120 : In the money option

PUT OPTION

Exercise Price = Rs.100

MARKET PRICE

Rs.80 : In the money option

Rs.100 : At the money option

Rs.120 : Out of the money option

Money ness of options

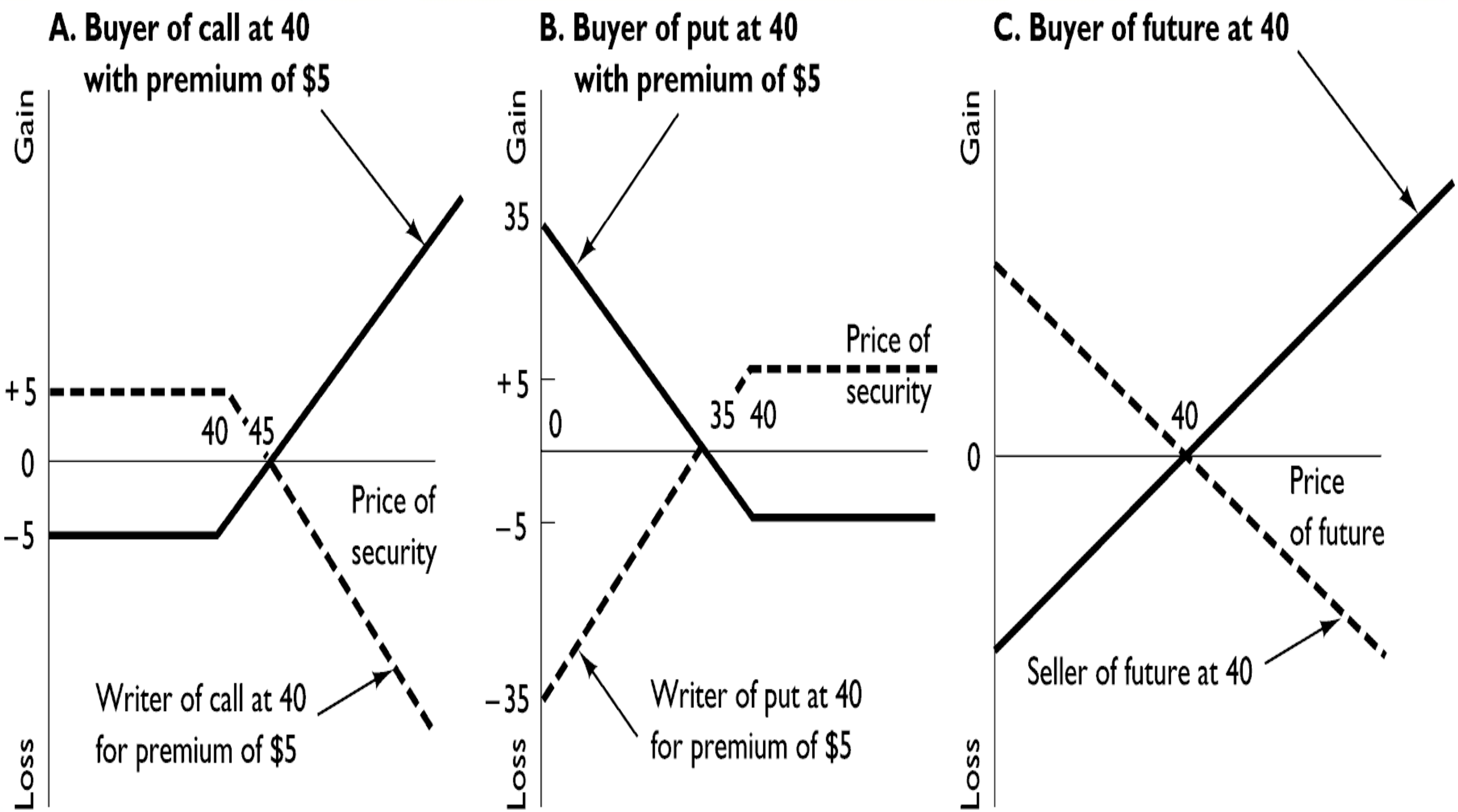
Question

The underlying asset of a Rs.55 call is trading at Rs.48. This call would be considered...

A. In-the-money.
B. At-the-money.
C. Out-of-the-money.

Ans : C

Gains and losses on options and futures contracts



Buyer and seller of options

- A person who has purchased an option is considered to be long the option (owner). A person who has sold the option is considered short the option (seller). However, these terms (long and short) are also used to refer to a position in the market. A person who thinks that the market will rise (or is bullish about the market) will make a long market position (buy a call or sell a put), while a person who thinks that the market will decline (or is bearish about the market) will make a short market position (sell a call or buy a put).

- The owner of a call (put) benefits from price increases (decreases) in the stock with limited downside risk. The most that can be lost is the price or premium of the option. However, the seller of a call (put) benefits from price decreases (increases) with unlimited loss potential and limited gains. The most that can be gained is the premium of the option.

Covered and naked options

- **Covered option** -- writer either owns the security involved in the contract or has limited his or her risk with other contracts.

- **Naked option** -- writer does not have or has not made provision to limit the extent of risk.

Types of options

Question:

An investor is bullish about the market for a particular underlying asset. Which of the following strategies might this investor pursue?

A. Long a put.
B. Short a put.
C. Short a call.
D. None of the above

Ans : B

Types of options

Question:

A trader is bearish about the market for a certain underlying asset. Which of the following strategies might this trader pursue?

A. Long a put.

B. Short a put.

C. Long a call.

D. Short a call.

E. A & D.

Ans: E

Factors affecting option prices

- Underlying asset Price
- Time remaining until expiration
- Volatility of underlying Stock Price
- Exercise Price
- Interest rates
- Dividends (in case of financial assets)

Price Sensitivity of Options

Factors Affecting Option Price (Increase)	Value of the Call
Asset Price	↑
Exercise Price	↓
Time to expiry	↑
Interest Rates	↑
Volatility	↑

Option Pricing Models

- Binomial Model
- Black- Scholes Model

THANK YOU

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